

THURSDAY, AUGUST 23, 1877

## MAURITIUS OBSERVATORY

*Reports for 1874 and 1875 of the Observatory, Mauritius (Appendices to Minutes of Council No. 9 of 1875, and No. 24 of 1876). Mauritius Meteorological Results, 1874 and 1875.*

THESE Reports give an interesting account of the progress of the Royal Alfred Observatory at Mauritius. The first division is devoted to the "Buildings, Grounds, and Water Supply;" this is a more important division than may be supposed at first sight. It appears in the Report for 1874, that in an attempt to arrange the grounds extensive pits were formed which were converted, through heavy rains, into noxious pools; while in next year's Report it is mentioned, under the head "Staff," that all had acted with "great zeal and perseverance notwithstanding occasional attacks of fever from which no one here has been exempt." The cause is indicated to be in a neighbouring marsh left undrained since 1872 or 1873.

In a similar report by the director of an observatory in South India to the Government, the construction of a road from the Observatory near the sea to another on the summit of the Ghats is mentioned as having been placed under his superintendence. The surveyor, however, who had to see the trace cut out, was unable to induce the coolies to accompany him through a certain part of the country, as a tiger had there carried away different members of a hill tribe. The director requested the Government to offer a suitable reward for the death of the man-eater, but in vain; the only reward promised being that usually given, the estimated value of the skin. The worth of the thing was what it would bring. A cooly, unlike a soldier, costs nothing to make him a useful machine; if a few coolies are snapped up by a hungry tiger others can always be had equally capable at the same daily rate of hire; the finances of the State do not suffer. If the director of the Observatory, the surveyor, or any other salaried officer, should be eaten, that would be a positive gain to the Treasury, since the pension due for previous services would be at once cancelled. No one can estimate the financial loss if a healthy officer should escape in such a case!

No Government, of course, would *reason* in this way, and we feel sure that of Mauritius will do what they can to make the scientific work they have so well begun as little dangerous as possible.

There remains, however, an annual source of discomfort and mischief in countries like the Mauritius where the rainfall is heavy—the "leaking" of the roofs. This is a more serious matter, financially speaking, than the health of the staff, since the whole objects of the observatory may be defeated by the action of humidity on the different instruments, including the object-glasses of the photo-heliograph, the equatorial, and other telescopes. In the Report for 1875 it is remarked that "the roof of the main building, which leaked considerably, has been repaired on two occasions. It still leaks, however, though not nearly as much as it did in February last, when some of the rooms were flooded, and books and papers were more or less damaged," &c. The roof of the Magnetic

Observatory is also noted as "now almost water-tight." We hope the importance of this matter will be thoroughly appreciated by the Government, since the preservation of the instruments and the whole value of the results to be obtained from them depends upon it.

The magnetical instruments have been placed twelve feet under ground. We are afraid that this is not a good arrangement. Dr. Lamont tried a similar plan at Munich during five years, and the damp rotted the wooden supports of the roof, &c. He was at last obliged to place all the instruments above ground. We have also tried a similar method for a short period; but the humidity in such positions, and especially where the soil is frequently saturated with water, is destructive of all satisfactory results. The great object sought is constancy of temperature, and this can be gained to a great extent by placing the instruments within an *inner* room with thick ceiling and inner walls. Such a room need be entered rarely, and with self-registering apparatus the parts requiring manipulation may be placed in an external chamber communicating with the instrument room by a small opening in the wall.

Dr. Meldrum, the able and zealous director of the observatory, has both magnetical and meteorological self-registering apparatus, and in connection with the latter he receives meteorological observations from various stations. Astronomical work is limited chiefly to certain occasional phenomena (the transit of Venus was observed). There is a time-ball; a tide-gauge is expected; sun-spot pictures are taken with the photo-heliograph; sea observations from ship-logs are studied; storm-warnings are given; a magnetic survey has been begun, and special researches are undertaken.

Among the latter are useful practical studies connected with cyclones, which merit the greatest encouragement. Dr. Meldrum has noticed in his Report for 1875 the difference of his and M. Faye's views as to cyclonic movements. The latter insists that the wind moves in circles round the centre, while the former upholds spirally inward flowing currents (see NATURE, vol. xii. p. 458). This difference involves a most important question. According to the usual rule, as M. Faye says, the centre of the cyclone is at right angles to the direction of the wind; according to the other the wind is blowing towards the centre. That is an exaggeration of Dr. Meldrum's view; but in the Report for 1875 he says (Art. 90) that if a ship runs before the wind to north-west, believing the centre of the cyclone to be to north-east, the latter may really be to north or to north by west; that is to say, may make an angle of 45° or even of only 34° with the wind direction. We cannot accept Mr. Meldrum's theory of spiral cyclonic movements with the associated ascending currents, in which we have never seen any reason to believe; but we think there is considerable evidence for affirming that the angle made by the direction of the surface wind and that of the cyclone centre is generally less than 90°; and we do not think that M. Faye, in his effort to apply mechanical principles to the movements of the aerial masses, has had all the conditions of the problem before him, a fact which will appear more evident when the results we have obtained relatively to the movements of the atmosphere and the directions of the lines of equal barometric pressure are taken into consideration.

We have need, however, of more exact observations in cyclones at different distances from the centres, as we think it not improbable that the angle which the wind makes with the direction of the centre may vary with the distance from it as well as with the wind velocity.

Dr. Meldrum has also found periods for the frequency of cyclones and for the amount of rainfall agreeing with the decennial period of sunspots. It will be difficult, we think, to obtain quite satisfactory results for the cyclones, as the amount of evidence which will prove the existence of one will vary with the individual judging. A gale with a certain amount of veering or backing experienced by some ships may belong to a cyclone or it may not, there is no precise measure in many cases where there is not a sufficiently wide distribution of ships. No measure, also, is taken of the dimensions of the cyclone or velocity of the wind, which it would be desirable to include in such an investigation. Some theorists insist that all winds are cyclonic. In any case we are inclined to believe that if such a decennial period exist it will be more accurately determined by measurements of the wind velocity for several years at fixed stations in different parts of the world. The question of such a period for the rainfall will, we have no doubt, receive ultimately a distinct answer from the observations at such stations, many series of which Dr. Meldrum has already collected and discussed with results in favour of the existence of such a period.

Meteorological results for 1874 and 1875 have also been published, and these include a number of important tables relating especially to the climatology of the Island.

JOHN ALLAN BROWN

### OUR BOOK SHELF

*A New London Flora; or, Handbook to the Botanical Localities of the Metropolitan Districts.* By E. Ch. de Crespigny, M.D. (London: Hardwicke and Bogue, 1877.)

THERE are some local floras which have more than a local value, from the interspersions of critical notes on the species and sub-species by competent authorities. Of this character are Leighton's "Flora of Shropshire," and Bromfield's of the Isle of Wight. Others, of more modest pretensions, aim only at supplying information of interest to collectors or to those engaged in investigating the facts connected with the geographical distribution of plants; and these possess the advantage that their moderate size enables them to be used as pocket-companions. To this latter category belongs the little volume we have now before us, which strikes us as being a very good volume of its kind. The greater part is occupied by a list of species (alphabetical, so as to avoid the necessity of an index) of Phanerogams and Cryptogams, with the general distribution or special habitats attached. The nomenclature is that of the "London Catalogue of British Plants of 1874," unencumbered by any disquisitions as to specific or varietal distinctions, or the limits of natural orders. Of the 1,665 Phanerogams and Vascular Cryptogams included in the "London Catalogue," no fewer than 1,250 are found within the limits of the metropolitan flora. These limits, as understood in Dr. de Crespigny's volume, are, however, somewhat vague. They are stated to include an "average thirty-mile radius," but the radius appears to extend considerably further in some directions than in others. Thus, while we find a reference to the well-known localities for *Hymenophyllum tunbridgense* near Tunbridge Wells, and *Osmunda regalis* near Haslemere,

there is none to that of *Anemone Pulsatilla* near Hitchin. These irregularities are, however, no doubt partly due to the direction of the author's individual researches, which seem to have been carried out with great zeal and accuracy, and to have extended over many years. The rest of the volume is occupied by a list of seventy-five localities, the scarcest and most interesting species of the locality being included in each list, distinguishing those which are authenticated by the author himself—by far the larger number. We can confidently recommend this volume to those interested in the flora of the metropolitan district.

*Ethnography and Philology of the Hidatsa Indians.* By Washington Matthews. (Washington: Government Printing-office, 1877.)

THE United States Geological and Geographical Survey deserves the highest credit for publishing a work which pedantic red-tapeism might have thought did not belong to its province, and Mr. Matthews deserves equal credit for the care, thoroughness and scientific precision with which he has compiled it. We hope that so good an example will find many imitators. The Hidatsa (Hidacha), or Minnetari Indians, are a branch of the Dakota family, and now form one of the three tribes whose scanty relics inhabit the permanent village at Fort Berthold. The two other tribes are the Mandans and the Arickaris, and the linguistic relations of the community form one of the most interesting and important facts ever presented to the notice of the philologist. "This trio of savage clans," says Mr. Matthews, "although now living in the same village, and having been next-door neighbours to one another for more than a hundred years on terms of peace and intimacy, and to a great extent intermarried, speak, nevertheless, totally distinct languages, which show no perceptible inclination to coalesce. The Mandan and Hidatsa languages are somewhat alike, and probably of a very distant common origin; but no resemblance has yet been detected between either of these and the Arickaree. Almost every member of each tribe understands the languages of the other tribes, yet he speaks his own most fluently; so it is not an uncommon thing to hear a dialogue carried on in two languages, one person, for instance, questioning in Mandan, and the other answering back in Grosventre (Hidatsa), and *vice versa*. Many of them understand the Dakota, and use it as a means of intercommunication, and all understand the sign-language." It should be added, as another curious philological fact that reduplication in verbs, which is a prominent feature of the Dakota, occurs in only one instance in the closely-allied Hidatsa. As in many other savage idioms, slight differences exist between the language of the women and of the men, the former tending to substitute *r* for *d*, and the latter preferring *l* and *n*. But the ethnologist as well as the philologist will find plenty of materials for study and reflection. Polygamy is practised, and a man usually marries his brother's widow, unless she object to the arrangement. Elopement sometimes takes place, divorce very rarely. "As with other western tribes, it is improper for a man to hold a direct conversation with his mother-in-law; but this custom seems to be falling into disuse." Males sometimes have four names, all containing the same noun, but a different adjective, and the names are afterwards solemnly changed once or even oftener. Coloured beads and pendants are made of pounded glass procured from the Europeans; the process of making them is very elaborate, and the antiquity of the art may be gathered from the fact that triangular pendants were used, "not as ornaments only, but as evidences of betrothal, as long ago as the oldest men can remember." Morally, the Hidatsa seem among the best of the Indians; they are described as industrious, honest, and peaceable, with fine physiques, light complexions, and great powers of endurance.